

Application No.: 09/505,645
Amendment dated December 1, 2003
Reply to Office action dated August 29, 2003

Docket No.: M4065.0757/P757

Amendments To The Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) An active pixel sensor comprising:

at least one pixel comprising a photodetector that outputs an output level indicative of incoming light;

a first sample and hold element electrically connected to the pixel operating to store said a signal output level during a readout operation;

a second sample and hold element electrically connected to the pixel operating to store a reset level during a readout operation;

a third sample and hold element electrically connected to the pixel operating to store the signal output level during a comparison operation;

an adjusted saturated voltage source, comprising a node that provides an adjusted saturation voltage; and

a comparator having a first input node operatively connected to the third sample and hold element, a second input node electrically connected to the adjusted saturation voltage node, and an output node, said comparator operating to output a signal indicating whether the adjusted saturation voltage exceeds the output level from the photodetector.

2. (Original) The active pixel sensor of claim 1 further comprising a latch including an input node and an output node, said input node operatively connected to the output node of the comparator operating to store a saturation flag in response to the adjusted saturation voltage exceeding the output level from the photodiode.

3. (Original) The active pixel sensor of claim 2 further comprising a select transistor operatively connected to the output node of the latch and operating to enable readout of the saturation flag during a readout operation for the pixel.

Application No.: 09/505,645
Amendment dated December 1, 2003
Reply to Office action dated August 29, 2003

Docket No.: M4065.0757/P757

4. (Original) The active pixel sensor of claim 1 wherein the photodetector is a photodiode.

5. (Original) An active pixel sensor comprising:

at least one pixel comprising a photodetector;

a sample and hold element electrically connected to the pixel and operating to store a signal level on the photodetector during a signal readout operation;

an adjusted saturated voltage source, comprising a node that provides an adjusted saturation voltage; and

a comparator having a first input node operatively connected to the sample and hold element, a second input node electrically connected to the adjusted saturation voltage node, and an output node;

a latch electrically connected to the comparator output node, said latch operating to store a saturation flag in response to the adjusted saturation voltage exceeding the signal level;

a select transistor operatively connected to the output node of the latch operating to enable readout of the saturation flag during a readout operation for the pixel;

a differencing element electrically connected to the pixel and operating to produce a difference level from the signal level and a reset level output from the pixel during the pixel readout operation;

an analog-to-digital converter for converting the difference level into a difference digital value; and

a digital output selector comprising

a detector operatively connected to the latch output node,

Application No.: 09/505,645
Amendment dated December 1, 2003
Reply to Office action dated August 29, 2003

Docket No.: M4065.0757/P757

an input node electrically connected to the analog-to-digital converter and an output node, and

a switch operating to switch the difference digital value on the output node to a maximum digital value in response to the detector detecting a saturation flag.

6. (Original) The active pixel sensor of claim 5, further comprising a plurality of pixels arranged in rows and columns.

7. (Original) The active pixel sensor of claim 6, wherein each column includes an analog-to-digital converter for converting the difference level into the difference digital value.

8. (Original) The active pixel sensor of claim 7, wherein the comparator is part of the analog-to-digital converter.

9. (Currently amended) A method for flagging an oversaturated pixel in an active pixel sensor array, the method comprising:

reading a signal voltage from a pixel;

comparing the signal voltage to an adjusted saturation voltage, wherein said adjusted saturation voltage is set to a minimum signal level; and

storing a saturation flag in response to the ~~adjusted saturation voltage~~ signal voltage exceeding the signal voltage adjusted saturation voltage.

10. (Original) The method of claim 9 further comprising:

reading a reset voltage from the pixel;

calculating a digitized value for said pixel from the reset voltage and the signal voltage;

determining whether the pixel has an associated saturation flag;

Application No.: 09/505,645
Amendment dated December 1, 2003
Reply to Office action dated August 29, 2003

Docket No.: M4065.0757/P757

Al
replacing said digitized value with a maximum digital value in response to the
pixel having an associated saturation flag.
